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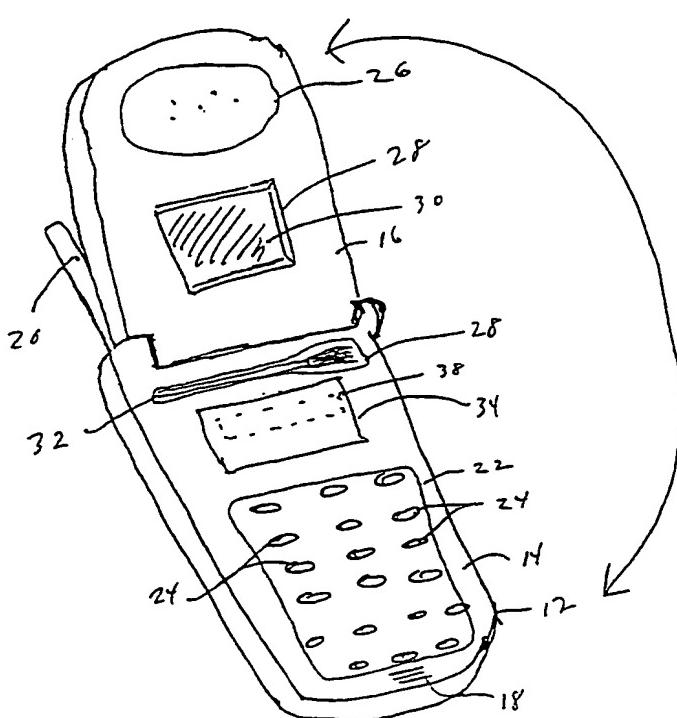
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(54) Title: COMBINED COSMETICS COMPACT AND HAND-HELD ELECTRONIC DEVICE



(57) Abstract: A hand-held electronic device (10), such as a radiotelephone, a personal data assistant, a pager, a portable computer, or the like, has one or more receptacles (28) configured to store cosmetics (30). The combined device (10) also preferably has a mirror (34) to provide all of the functionality of a conventional cosmetics compact in addition to the functionality of the electronic device (10). In one embodiment, the device has an electrochromic mirror (34) that can be operated in either a display mode or a mirror mode. The device may be configured to switch automatically from mirror mode to display mode when, for example, the electronic device is a radiotelephone and an incoming call is received by the device. In addition, the battery used to power the electronic device may be configured to power heaters configured in at least one of the receptacles to heat makeup contained therein for easier application.

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— *With international search report.*

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COMBINED COSMETICS COMPACT AND HAND-HELD ELECTRONIC DEVICE

BACKGROUND OF THE INVENTION

Field of the Invention

This invention is related to cosmetics compacts and other containers for storing cosmetics. This invention is also related to hand-held electronic devices, such as radiotelephones, personal data assistants (PDAs), pagers, portable computers, and the like.

Cross-Reference to Related Applications

This is a continuation-in-part of co-pending U.S. application serial number 09/349,651, filed on 08 July 1999, as attorney docket no. M3-1, the teachings of which are incorporated herein by reference.

Description of the Related Art

A radiotelephone (e.g., a cellular or wireless mobile telephone) allows a user to place or receive a telephone call in any area covered by the corresponding telecommunications system. This ability to communicate from virtually any location has made radiotelephones extremely popular. Radiotelephone popularity has been further driven by design and technical advancements that permit radiotelephones to be conveniently carried.

One common radiotelephone design utilizes two housing elements connected with a hinging mechanism. This arrangement provides a more compact radiotelephone when the two housings are folded upon themselves (i.e., the "closed" configuration).

Many radiotelephones utilizing the two-housing folding design have most of the electronics within a larger one of the two housings (i.e., the "main" housing). The smaller housing or "flip" element typically contains either the microphone or the speaker. Other radiotelephones utilizing the two-housing folding design have all the working components within the main housings, in which case, the flip element contains no electronics.

Many women carry radiotelephones in handbags or jacket pockets. Although, radiotelephones are relatively small and convenient to carry, space in handbags and pockets is limited and commonly used for carrying other items such as cosmetic makeup compacts.

SUMMARY OF THE INVENTION

The present invention is directed to a combined cosmetics compact and hand-held electronic device, such as a radiotelephone, a personal data assistant (PDA), a pager, a portable computer, or the like. According to the present invention, in addition to providing all of the conventional hardware and functionality of the corresponding hand-held electronic device, the invention also provides one or more

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receptacles designed and configured to store cosmetics. For purposes of this application, the term "cosmetics" is used to refer both to makeup, such as lip gloss, face powder, and the like, as well as to the applicators, such as brushes and pads, used to apply such makeup. By providing a combined cosmetics compact and hand-held electronic device, the present invention enables more efficient use of the typically limited volume inside handbags and pockets conventionally used to hold the separate and distinct cosmetics compacts and hand-held electronic devices of the prior art.

In one embodiment, the present invention is a combined cosmetics compact and hand-held electronic device, comprising (a) electronic components configured to provide functions of the electronic device; and (b) a main housing having one or more receptacles configured to store cosmetics.

In another embodiment, the present invention is an electronic device, comprising electronic components configured to provide functions of the electronic device, wherein a first electronic component has (1) a mirror mode in which the first electronic component is configured to operate as a mirror and (2) a display mode in which the first electronic component is configured to operate as a display for the electronic device.

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BRIEF DESCRIPTION OF THE DRAWINGS

Other aspects, features, and advantages of the present invention will become more fully apparent from the following detailed description, the appended claims, and the accompanying drawings in which:

FIG. 1 is a perspective view of a combined cosmetics compact and radiotelephone device, according to a first embodiment of the present invention;

FIG. 2 is a sectional side view of the display screen of the device of FIG. 1;

FIG. 3 is a perspective view of a combined cosmetics compact and radiotelephone device, according to a second embodiment of the present invention;

FIG. 4 is a perspective view of a combined cosmetics compact and radiotelephone device, according to a third embodiment of the present invention;

FIG. 5A is a perspective view of a combined cosmetics compact and radiotelephone device, according to a fourth embodiment of the present invention; and

FIG. 5B shows a perspective view of a retracting receptacle of the device of FIG. 5A in its extended configuration.

It should be understood that these drawings are for purposes of illustrating the concepts of the invention and are not necessarily to scale.

DETAILED DESCRIPTION

FIG. 1 shows a portable, combined cosmetics package and radiotelephone device 10, according to a first embodiment of the present invention. Device 10 comprises a casing 12 having a main housing 14

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and a secondary housing or flip element 16 hinged to main housing 14. The two housings 14 and 16 of device 10 are shown in its "open" configuration. Housings 14 and 16 contain all the necessary electronic and mechanical components of a conventional radiotelephone, the details of which are well known to those skilled in the radiotelephone art. Most of these components are typically contained in main housing 14, although component location in housings 14 and 16 is a matter of design choice. In other embodiments of the invention, device 10 can be constructed as a single, non-folding unit with only a single, main housing.

The working radiotelephone components include a microphone 18, an antenna 20 which enables wireless communication between device 10 and a base station (not shown), a rechargeable battery (not shown) that supplies power for the electronic components of device 10, and a keypad 22 having a plurality of buttons 24 in a conventional telephone arrangement for dialing phone numbers. Keypad 22 can also have additional function buttons, such as channel select, volume control, and other buttons associated with telephone operation. A speaker 26 is provided in flip element 16.

According to the present invention, one or more receptacles 28 for storing makeup 30 (such as lip gloss, powder, etc.) and conventional makeup applicators 32 (such as brushes or pads) are defined in main housing 18 and/or flip element 16. In some embodiments, one or more receptacles 28 used for storing makeup have heaters that can be heated via power supplied by the battery of device 10 to heat the makeup, thus making it easier to apply. The individual receptacles 28 can also include conventional closure arrangements for preventing spillage.

Main housing 14 further includes a display screen 34, which selectively operates (1) in a display mode to display alphanumeric characters that provide typical information relating to telephony operations of the device, such as inputted or outputted telephone numbers and signal and/or battery strength, and (2) in a mirror mode as a vanity mirror.

As shown in FIG. 2, display screen 34 can be implemented using an electrochromic mirror 36 that has an information display area 38 (designated by broken lines in FIG. 1) which displays alphanumeric characters produced by a display device 40 aligned with the information display area of electrochromic mirror 36. The structural and operational details of such a display screen can be found in U.S. Patent 5,825,527, entitled "Information Display Area on Electrochromic Mirrors Having Third Surface Metal Reflector," issued 20 October 1998, the teachings of which are incorporated herein by reference.

Electrochromic mirror 36 of display screen 34 typically includes an outer glass element 42 and an inner glass element 44, spaced apart from one another. Outer element 42 is transparent and includes a layer 46 of transparent conductive material disposed on its rear surface. Inner element 44 includes at least one layer 48 of a reflective conductive material disposed on its front surface. Outer and inner elements 42 and 44 are sealably bonded together in a spaced-apart relationship so that they define a

chamber 50 therebetween. An electrochromic, reversibly variable transmittance medium 52 is contained in chamber 50 in contact with both conductive layer 46 of outer element 42 and conductive layer 48 of inner element 44. Information display area 38 is defined on the front surface of the inner element and is visible through outer element 42. The display area is made up of lines 54 in layer 48 that are devoid of conductive reflective material separated by lines 56 of the conductive reflective material. Lines 56 of conductive reflective material are in electrical contact with the remaining portion 58 of conductive reflective material 48. Display 40 is juxtaposed with the rear surface of inner element 44 and aligned with information display area 38. Display 40 is conventional and can include liquid crystal displays, light-emitting diode displays, or any other suitable display that is capable of displaying alphanumeric characters.

Device 10 can be operated as a radiotelephone or a cosmetic compact by merely switching display screen 34 between the display mode and the mirror mode using one of the keypad buttons 24. The corresponding button 24 actuates electronic circuitry disposed in one or both of housings 14 and 16 that applies an appropriate voltage to transparent and reflective conductive layers 46 and 48 of electrochromic mirror 36. The applied voltages increase or decrease the transmittance of electrochromic transmittance medium 52 contained in chamber 50 of the mirror 36, thereby increasing or decreasing the mirror's reflectivity. It should be noted that when device 10 is in the mirror mode, it can also be used as a security device to allow a user to discreetly view activity taking place behind her.

When display screen 34 is switched to the display mode, the reflectivity of electrochromic mirror 36 is selectively reduced to permit viewing of information presented by display 40 through outer element 42 of mirror 36. This feature permits device 10 to be conventionally operated as a radiotelephone.

Switching display screen 34 into the mirror mode selectively increases the reflectivity of electrochromic mirror 36, thus permitting a user to view her image in display screen 34. This feature and the included makeup 30 and makeup applicator 32 allow device 10 to be advantageously used as a cosmetics compact. If an incoming telephone call is received while display screen 34 is in the mirror mode, the electronic circuitry associated with display screen 34 can be configured to automatically switch display screen 34 to the display mode to allow the device to be operated as a radiotelephone again.

FIG. 3 shows a portable, combined cosmetics package and radiotelephone device 60, according to a second embodiment of the present invention, where like reference numerals of FIGS. 1 and 3 identify like elements. Device 60 of this embodiment differs from device 10 of FIGS. 1 and 2 in that it includes a conventional mirror 62 integrated into flip element 16. Alternatively, mirror 62 could be integrated into main housing 14. In any case, mirror 62 integrated into one of the housings 14 and 16 permits a conventional display screen and display arrangement 64 to be used.

FIG. 4 shows a portable, combined cosmetics package and radiotelephone device 70, according to a third embodiment of the present invention. According to this embodiment, in addition to or instead of

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the various cosmetics-related features of devices 10 and 60 of FIGS. 1 and 3, device 70 comprises a receptacle for receiving an appendage 72, preferably resembling a radiotelephone antenna, such as antenna 26, where appendage 72 functions as the wand handle for a brush or pad of a lip-gloss or other makeup applicator that is stored in the receptacle within the body of device 70 and can be unscrewed or otherwise removed from the body of device 70 for use as a conventional makeup applicator.

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Alternatively, appendage 72 could be based on a conventional lipstick applicator that can be stored in the receptacle. Depending on the implementation, the receptacle for appendage 72 may be spring loaded to enable appendage 72 to be pressed in relatively flush with the body of device 70, similar to the retractable controls on some automobile radios.

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Furthermore, as shown in FIG. 4, device 70 is a hinged device having its keypad 72 configured on the outer surface of flip element 76, as opposed to devices 10 and 60 of FIGS. 1 and 3, in which keypad 22 is part of main housing 14 and is covered by flip element 16 when the device is in its closed configuration. In device 70, flip element 76 can be flipped open to provide access to one or more concealed cosmetics receptacles (not shown) disposed within main housing 74. In alternative embodiments, in addition or instead, display 78 could be hinged to provide access to one or more concealed cosmetics receptacles (not shown) in main housing 74. As an alternative to hinges, element 76 could be configured to slide or pivot with respect to main housing 74 to provide access to one or more concealed cosmetics receptacles.

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FIG. 5A is a perspective view of a combined cosmetics compact and radiotelephone device 80, according to a fourth embodiment of the present invention. According to this embodiment, in addition to or instead of the various cosmetics-related features of devices 10, 60, and 70 of FIGS. 1, 3, and 4, device 80 comprises two retracting receptacles 82 and 84 for cosmetics configured within a side of main housing 86. Receptacle 82 is a hinged compartment that pivots away from the side of main housing 86 to provide access to cosmetics contained therein. Receptacle 84 has a sliding panel 88 that slides along the side of main housing 86 to expose receptacle 84.

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FIG. 5B shows a perspective view of receptacle 84 of device 80 of FIG. 5A, in which receptacle 84 is shown in its extended configuration to provide access to cosmetics contained therein.

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In general, any of the various receptacles for cosmetics in the different devices described herein could be configured to receive a removable makeup container that enables the receptacle to be reloaded with a new container with a fresh supply of makeup as the makeup in the old container is used up.

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Although the present invention has been described in the context of devices corresponding to combined cosmetics compacts and radiotelephones, those skilled in the art will understand that the present invention can be implemented as the combination of cosmetics compacts with other types of hand-held electronic devices, including different types of cellular or wireless mobile telephones, personal data assistants (PDAs), pagers, portable computers, and the like, including multi-functional hand-held

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electronic devices that combine the functionality of mobile telephones, PDAs, pagers, and/or portable computers.

It will be further understood that various changes in the details, materials, and arrangements of the parts which have been described and illustrated in order to explain the nature of this invention may be made by those skilled in the art without departing from the scope of the invention as expressed in the following claims.

CLAIMS

What is claimed is:

1. A combined cosmetics compact and hand-held electronic device, comprising:

(a) electronic components configured to provide functions of the electronic device; and

(b) a main housing having one or more receptacles configured to store cosmetics.

5 2. The device of claim 1, wherein the electronic device provides the functions of at least one of a radiotelephone, a personal data assistant, a pager, and a portable computer.

10 3. The device of claim 1, wherein a first electronic component has (1) a mirror mode in which the first electronic component is configured to operate as a mirror for the cosmetics compact and (2) a display mode in which the first electronic component is configured to operate as a display for the electronic device.

15 4. The device of claim 3, wherein the first electronic component is an electrochromic mirror whose reflectivity is a function of voltage applied across an electrochromic material contained within the electrochromic mirror.

20 5. The device of claim 3, wherein the first electronic component is configured to switch automatically from the mirror mode to the display mode under one or more specific sets of conditions.

25 6. The device of claim 5, wherein the electronic device is configured to provide the functions of a radiotelephone and the first electronic component is configured to switch automatically from the mirror mode to the display mode when the electronic device receives an incoming telephone call.

7. The device of claim 1, further comprising a battery configured to provide power to the electronic device, wherein the battery is further configured to provide power to a heater in a first cosmetics receptacle to heat makeup stored therein.

30 8. The device of claim 1, further comprising a second housing, movably connected to the main housing to enable the device to be configured in either an open configuration or a closed configuration.

35 9. The device of claim 8, wherein the second housing conceals a first cosmetics receptacle when the device is in the closed configuration, wherein the second housing provides access to the first cosmetics receptacle when the device is in the open configuration.

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10. The device of claim 1, wherein a first cosmetics receptacle is configured to receive a makeup applicator.

5 11. The device of claim 10, wherein the first cosmetics receptacle is configured on a top side of the main housing, wherein the first cosmetics receptacle is configured to store a removable makeup applicator.

10 12. The device of claim 1, wherein a first cosmetics receptacle is a retractable receptacle that can be configured in an extended configuration to provide access to cosmetics contained therein and in a retracted configuration in which the cosmetics are stored within the main housing of the device.

13. The device of claim 1, wherein:

the electronic device provides the functions of at least one of a radiotelephone, a personal data assistant, a pager, and a portable computer;

15 a first electronic component is an electrochromic mirror whose reflectivity is a function of voltage applied across an electrochromic material contained within the electrochromic mirror, wherein the first electronic component has (1) a mirror mode in which the first electronic component is configured to operate as a mirror for the cosmetics compact and (2) a display mode in which the first electronic component is configured to operate as a display for the electronic device, wherein the first electronic component is configured to switch automatically from the mirror mode to the display mode under one or more specific sets of conditions; and

20 further comprising:

(c) a battery configured to provide power to the electronic device, wherein the battery is further configured to provide power to a heater in a first cosmetics receptacle to heat makeup stored therein; and

25 (d) a second housing, movably connected to the main housing to enable the device to be configured in either an open configuration or a closed configuration.

30 14. The device of claim 13, wherein the electronic device is configured to provide the functions of a radiotelephone and the first electronic component is configured to switch automatically from the mirror mode to the display mode when the electronic device receives an incoming telephone call.

15. The device of claim 13, wherein the second housing conceals a first cosmetics receptacle when the device is in the closed configuration, wherein the second housing provides access to the first cosmetics receptacle when the device is in the open configuration.

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16. The device of claim 13, wherein a first cosmetics receptacle is configured to receive a removable makeup applicator on a top side of the main housing.

5 17. The device of claim 13, wherein a first cosmetics receptacle is a retractable receptacle that can be configured in an extended configuration to provide access to cosmetics contained therein and in a retracted configuration in which the cosmetics are stored within the main housing of the device.

10 18. An electronic device, comprising electronic components configured to provide functions of the electronic device, wherein a first electronic component has (1) a mirror mode in which the first electronic component is configured to operate as a mirror and (2) a display mode in which the first electronic component is configured to operate as a display for the electronic device.

15 19. The device of claim 18, wherein the electronic device provides the functions of at least one of a radiotelephone, a personal data assistant, a pager, and a portable computer.

20 20. The device of claim 18, wherein the first electronic component is an electrochromic mirror whose reflectivity is a function of voltage applied across an electrochromic material contained within the electrochromic mirror.

25 21. The device of claim 18, wherein the first electronic component is configured to switch automatically from the mirror mode to the display mode under one or more specific sets of conditions.

22. The device of claim 21, wherein the electronic device is configured to provide the functions of a radiotelephone and the first electronic component is configured to switch automatically from the mirror mode to the display mode when the electronic device receives an incoming telephone call.

30 23. The device of claim 22, wherein the first electronic component is an electrochromic mirror whose reflectivity is a function of voltage applied across an electrochromic material contained within the electrochromic mirror.

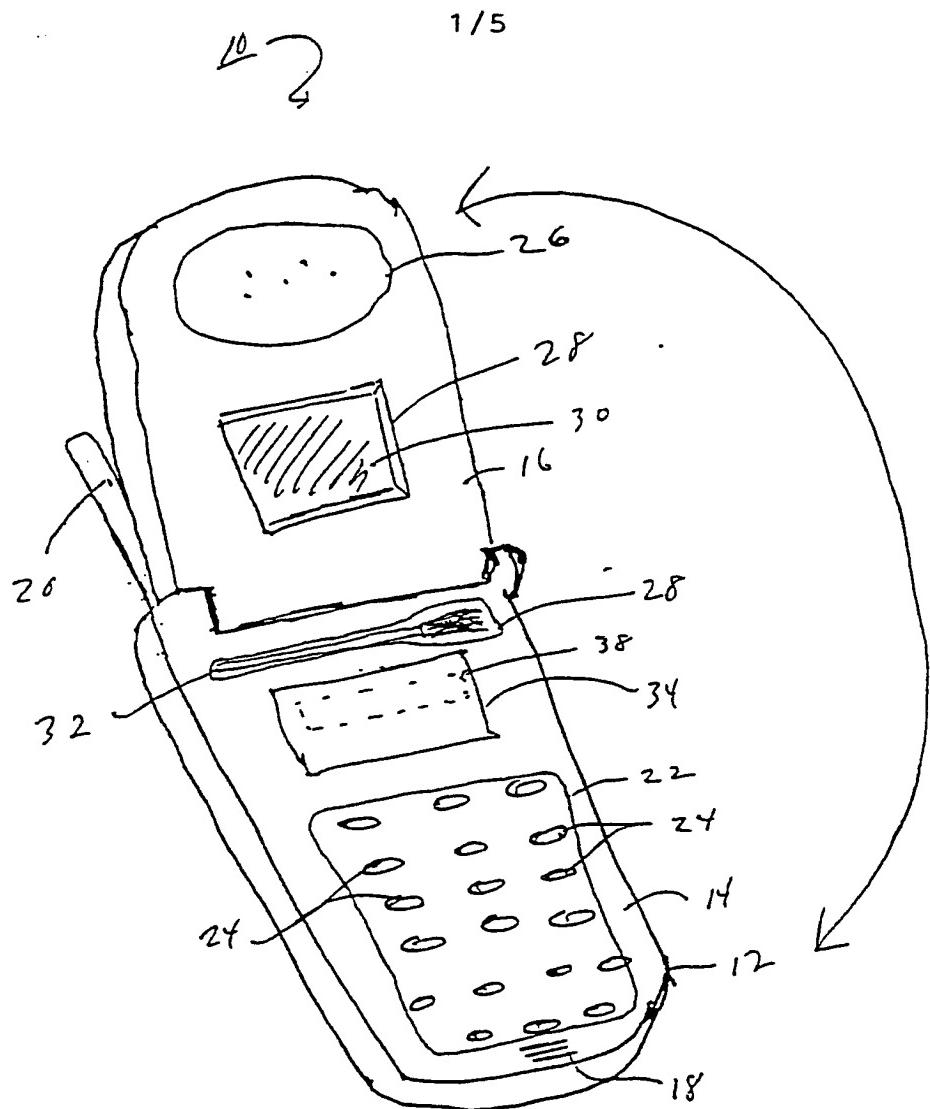
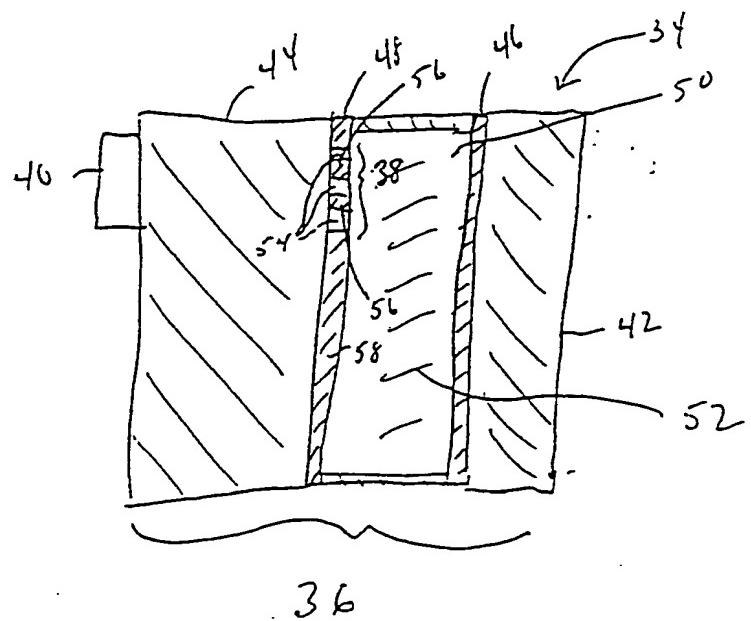


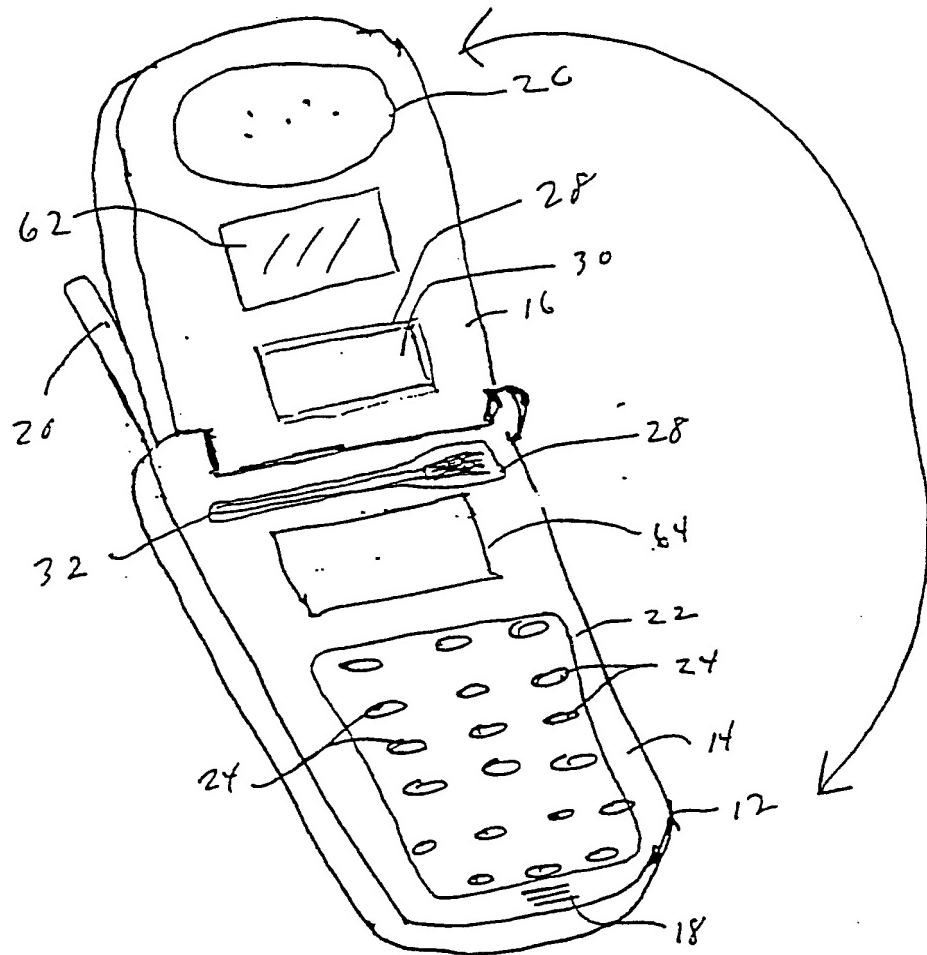
FIG. 1

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F16.2

60 → 3/5



F16.3

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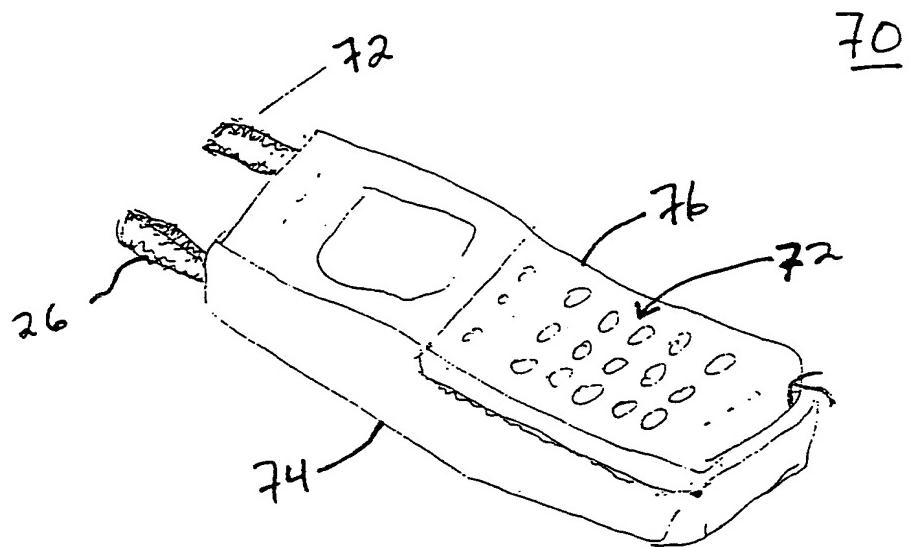


FIG. 4

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FIG. 5A

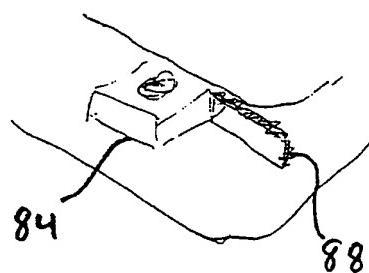
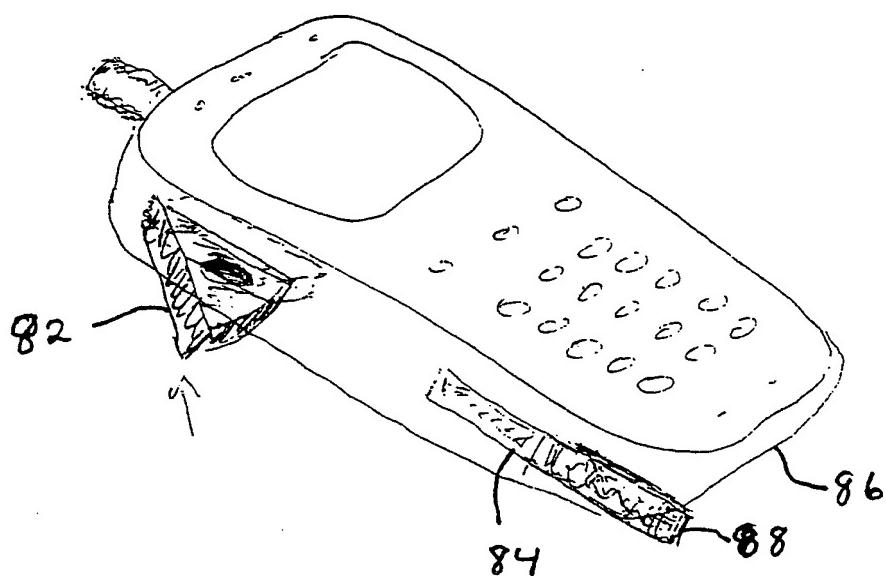
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FIG. 5B

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/18592

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :Please See Extra Sheet.
US CL : 455/556, 90, 344; 132/314, 315, 316
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 455/556, 90, 344, 550, 566; 132/314, 315, 316; 206/581, 235; 350/357

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ----	US 5,566,224 A (UL AZAM et al) 15 October 1996, figure 3, col. 3 lines 39-45, and col. 7 line 5 to col. 8 line 36.	1-3, 5, 8-11, 18, 19, and 21
Y		----- 4, 6, 7 12-17, 20, 22 and 23
Y	US 5,775,344 A (CLAY) 07 July 1998, col. 2 lines 3-63.	7 and 13-17
Y	US 4,793,695 A (WADA et al) 27 December 1988, col. 3 lines 32-36	4, 13, 20 and 23
Y,P	US 6,055,445 A (HIROKI) 25 April 2000, col. 14 lines 59-61.	6, 14 and 22

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/18592

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4,580,586 A (KITOH et al) 08 April 1986, figure 7 and col. 1 line 42 to col. 2 line 23.	12 and 17

INTERNATIONAL SEARCH REPORT

International application No.
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A. CLASSIFICATION OF SUBJECT MATTER:
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